Space Weather Forecast

Issued on Monday, 17 June 2024 at 12:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Isolated Moderate flares (R1-R2 radio blackouts) likely throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is moderate, with two Moderate flares from AR3712, the largest sunspot region on the disk.

There are currently seven sunspots on the disc. The most complex groups all lie close to centre disk, foremost amongst these AR3712 in the south. This region continues to display significant magnetic complexity although overall evolution and spot development appears to have slowed in recent hours. Also of note is AR3716 to the north, which has shown some merging of its intermediate spots, perhaps a sign of slight stabilisation. The other regions on the disk appear generally stable or are in decline.

No Earth directed CMEs (Coronal Mass Ejection) were in evidence in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were mostly slightly elevated, initially averaging around 380-420 km/s they increased to around 430-460 km/s from 16/1430 UTC, with a second increase to 500-520km/s perhaps associated with a more solid connection to a faster solar wind stream observed from 17/0300 UTC. Although this fairly brief with speeds reverting to previous levels from around 17/0800 UTC. The Interplanetary Magnetic Field (IMF), Bt, was fairly erratic at weak to moderate levels. The north-south component oscillated weakly. The resultant geomagnetic activity was largely Quiet to Unsettled (Kp1-3) but became Active (Kp4) for the 16/1800-2100 period.

Energetic Particles / Solar Radiation: The high energy (greater than 10 MeV) proton flux observed by GOES18 remained at resting background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Isolated Moderate flares are likely, with a slight chance of isolated strong flares. This risk primarily from the large, complex sunspot close to centre-disc in the south.

Solar Wind / Geomagnetic Activity: The solar wind is currently slightly elevated at around 450 km/s, likely from an erratic connection with a coronal hole, a source region for faster solar winds. Slightly elevated solar wind speeds of 450-500 km/s are expected to continue for day 1 (17 June) and much of day 2 (18 June), before declining back to background into the second half of the period.

Geomagnetic activity is expected to remain at largely quiet to unsettled levels (Kp1-3) for much of the period. During days 1-2 (17-18 Jun) isolated Active (Kp4) intervals are likely, with just a slight chance of isolated G1/Minor Storm intervals (Kp5) due to connection with the faster solar

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winds associated with the coronal hole.

Energetic Particles / Solar Radiation: Solar radiation levels are expected to remain at Background levels, with just a slight but increasing chance of reaching S1 Minor Radiation Storm levels following any significant solar flares.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	15	15	15
Very Active	≥ S3 *	No	1	5	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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